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**Jin et al.**

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(54) **VARIABLE LIGHTING APPARATUS**

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(51) **Int. Cl.**

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| ***F21S 13/10*** | (2006.01) |
| ***H05B 33/08*** | (2006.01) |
| ***F21V 23/06*** | (2006.01) |
| ***F21V 17/00*** | (2006.01) |

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CPC ..... ***H05B 33/0803*** (2013.01); ***F21V 17/002*** (2013.01); ***F21V 21/00*** (2013.01); ***F21V 21/06*** (2013.01); ***F21V 23/06*** (2013.01); *F21S 6/00* (2013.01); *F21S 8/033* (2013.01); *F21S 8/04* (2013.01); *F21V 17/02* (2013.01); *F21V 21/14* (2013.01); *F21W 2131/103* (2013.01); *F21Y 2101/02* (2013.01)

(58) **Field of Classification Search**

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USPC ..... 362/413, 433, 418, 419, 430, 431, 457, 362/458, 563, 564, 123, 806

See application file for complete search history.

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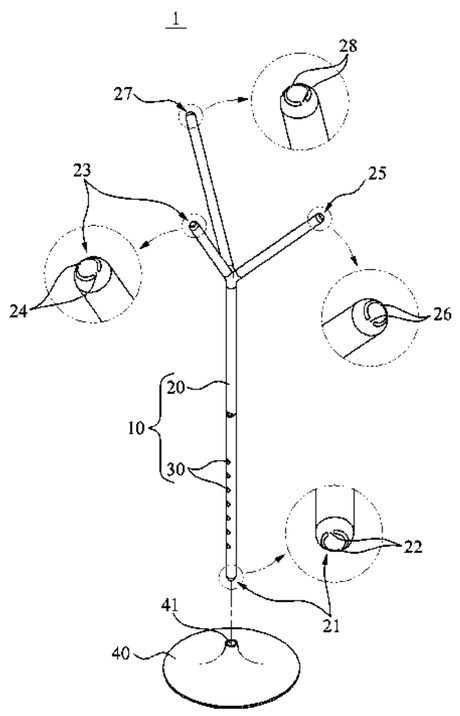
(57) **ABSTRACT**

Provided is a variable lighting apparatus that may include a lighting unit to emit light and including a plurality of connection end portions extending in different directions and at different angels, a supporting unit selectively connected with one of the plurality of connection end portions of the lighting unit to support the lighting unit, and to provide power to the connected lighting unit based on a contact point connection scheme. At least one of a light angle, a light direction, an elevation of light, and an amount of light associated with light emitted from the lighting unit varies based on a change in a state of connections between the plurality of connections portions and the supporting unit. The variable lighting apparatus may readily vary a lighting condition by changing a state of a connection between the lighting unit and the supporting unit.

**3 Claims, 7 Drawing Sheets**



(51) **Int. Cl.**

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| ***F21V 21/00*** | (2006.01) |
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| *F21S 8/00* | (2006.01) |
| *F21S 8/04* | (2006.01) |
| *F21V 17/02* | (2006.01) |
| *F21W 131/103* | (2006.01) |
| *F21Y 101/02* | (2006.01) |

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FIG. 1

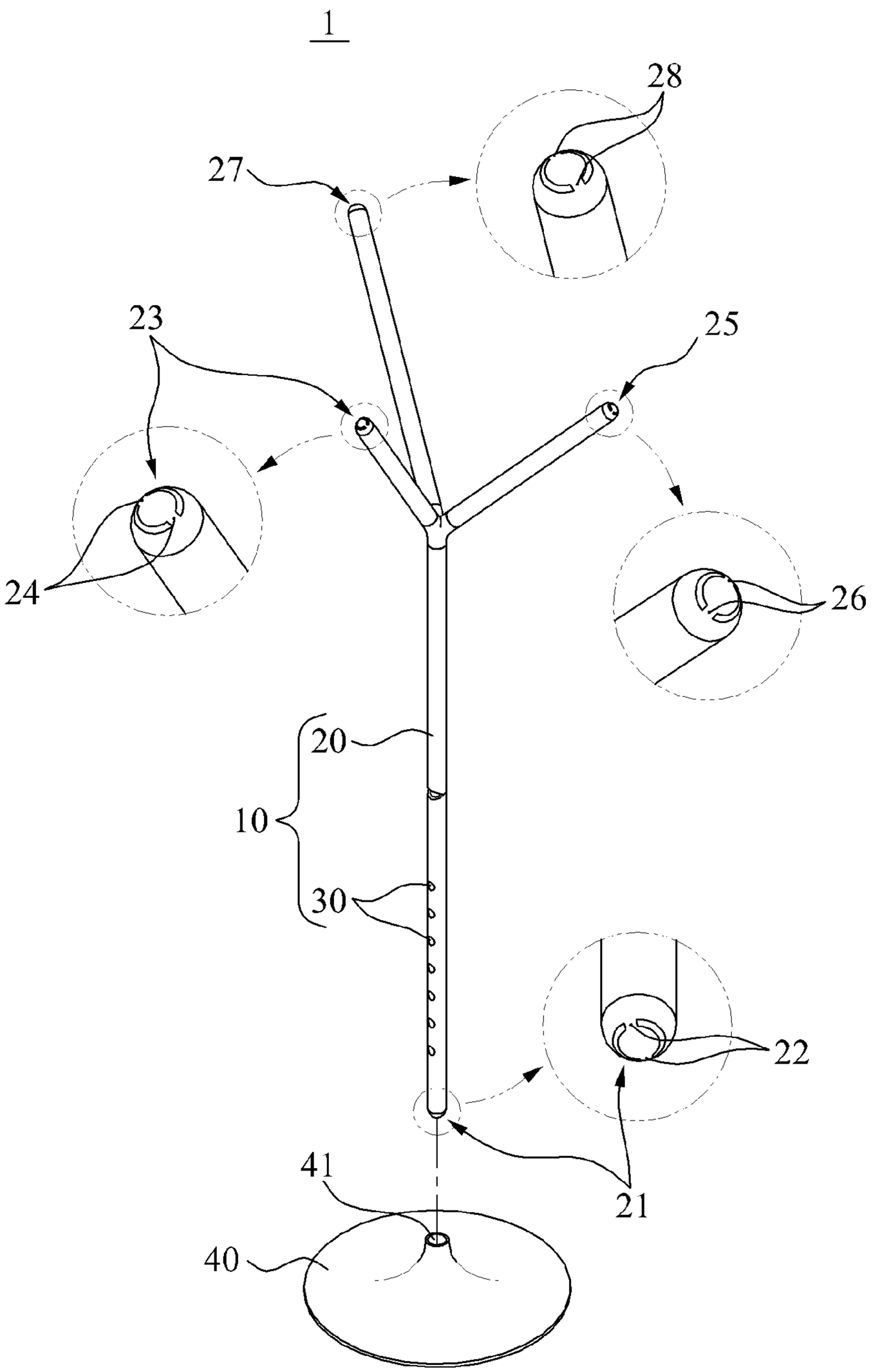


FIG. 2

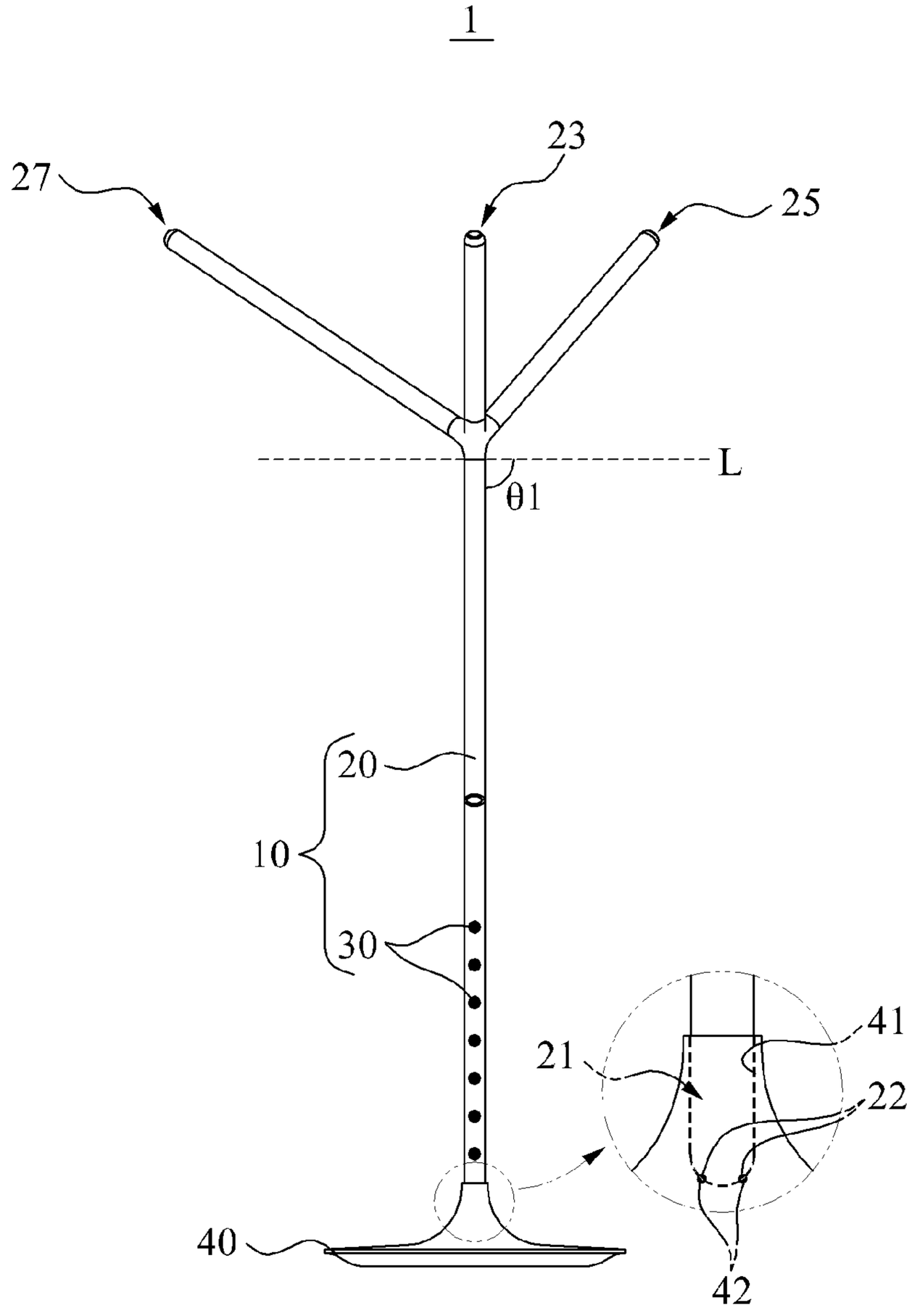


FIG. 3

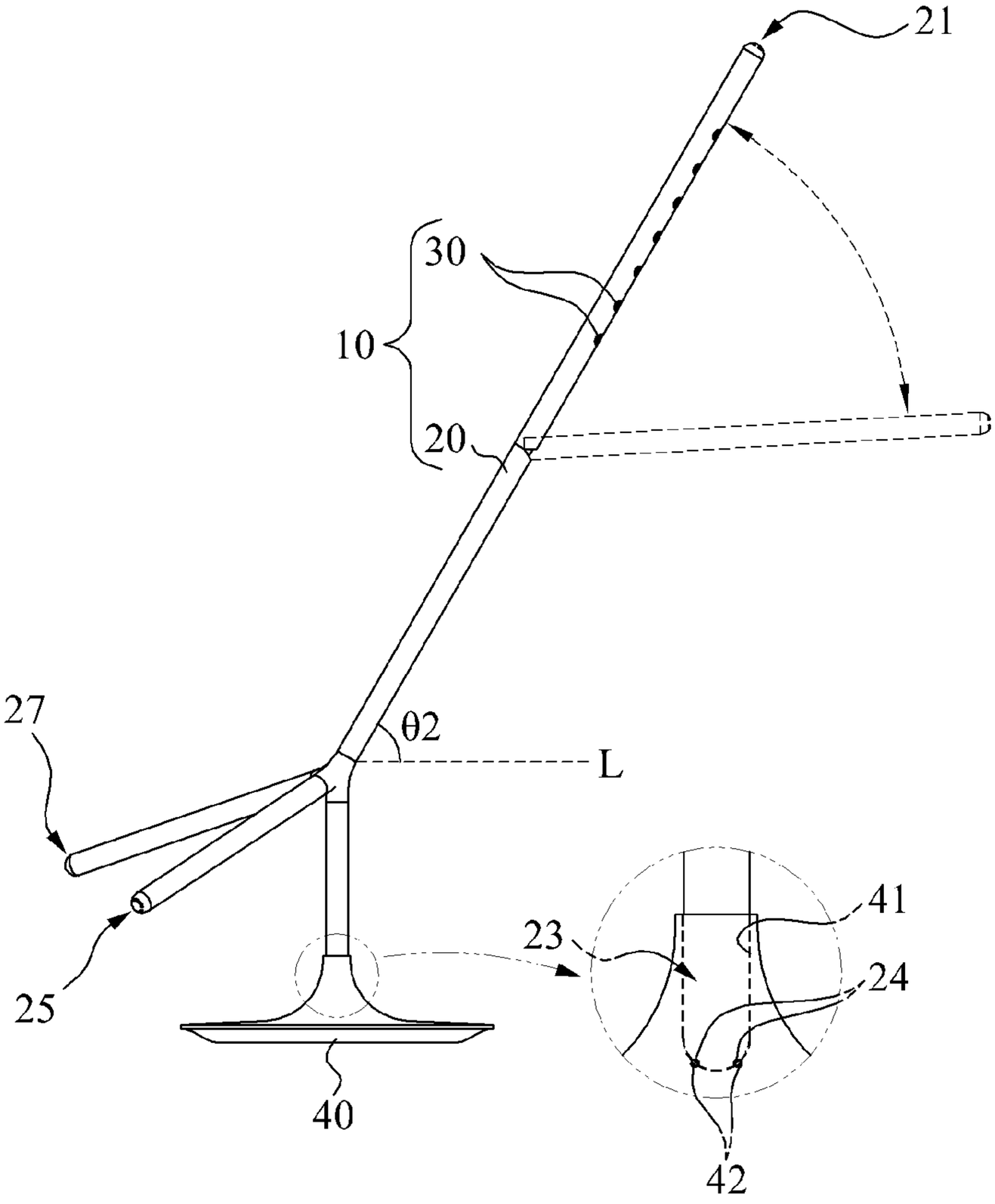


FIG. 4

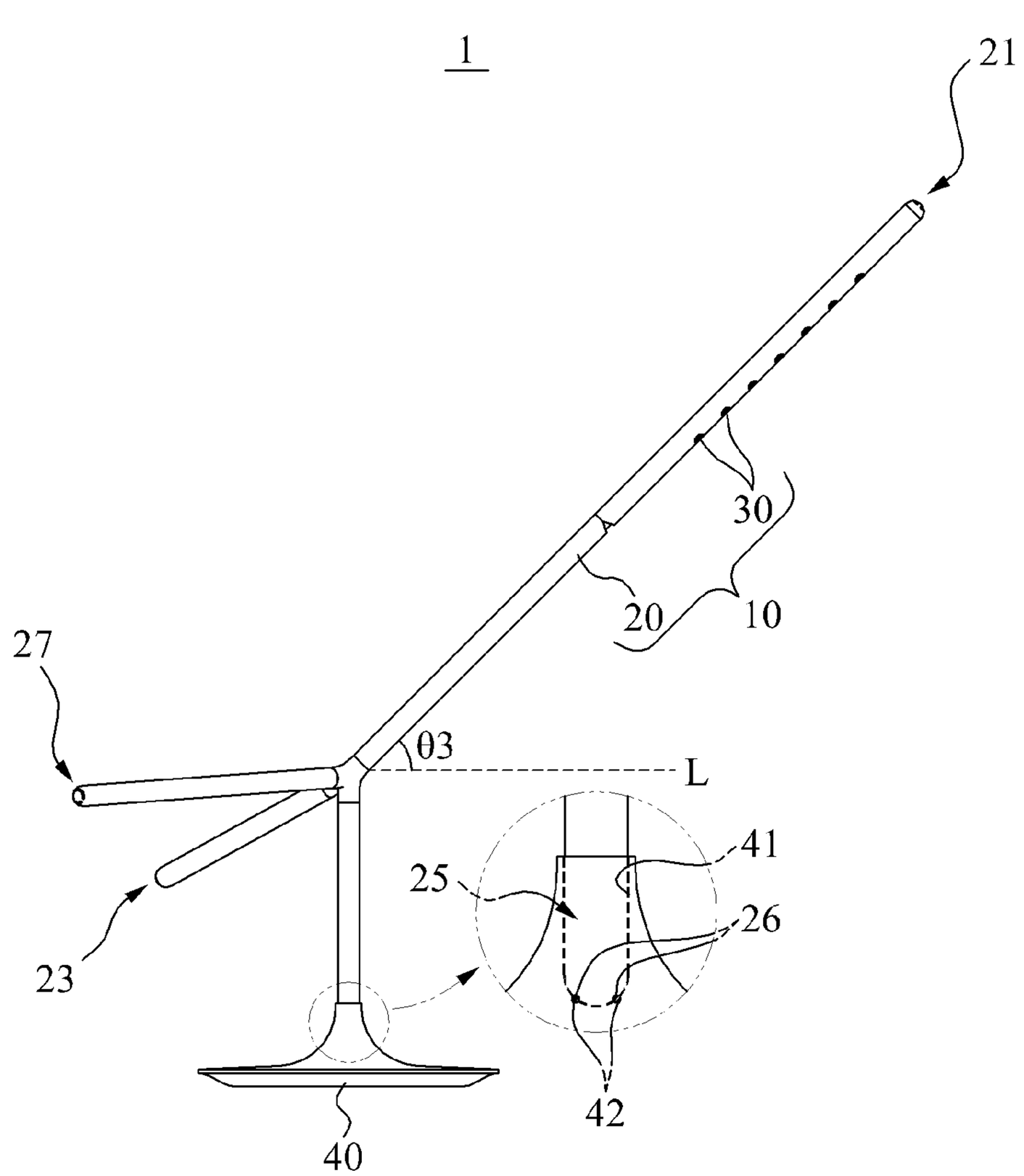


FIG. 5

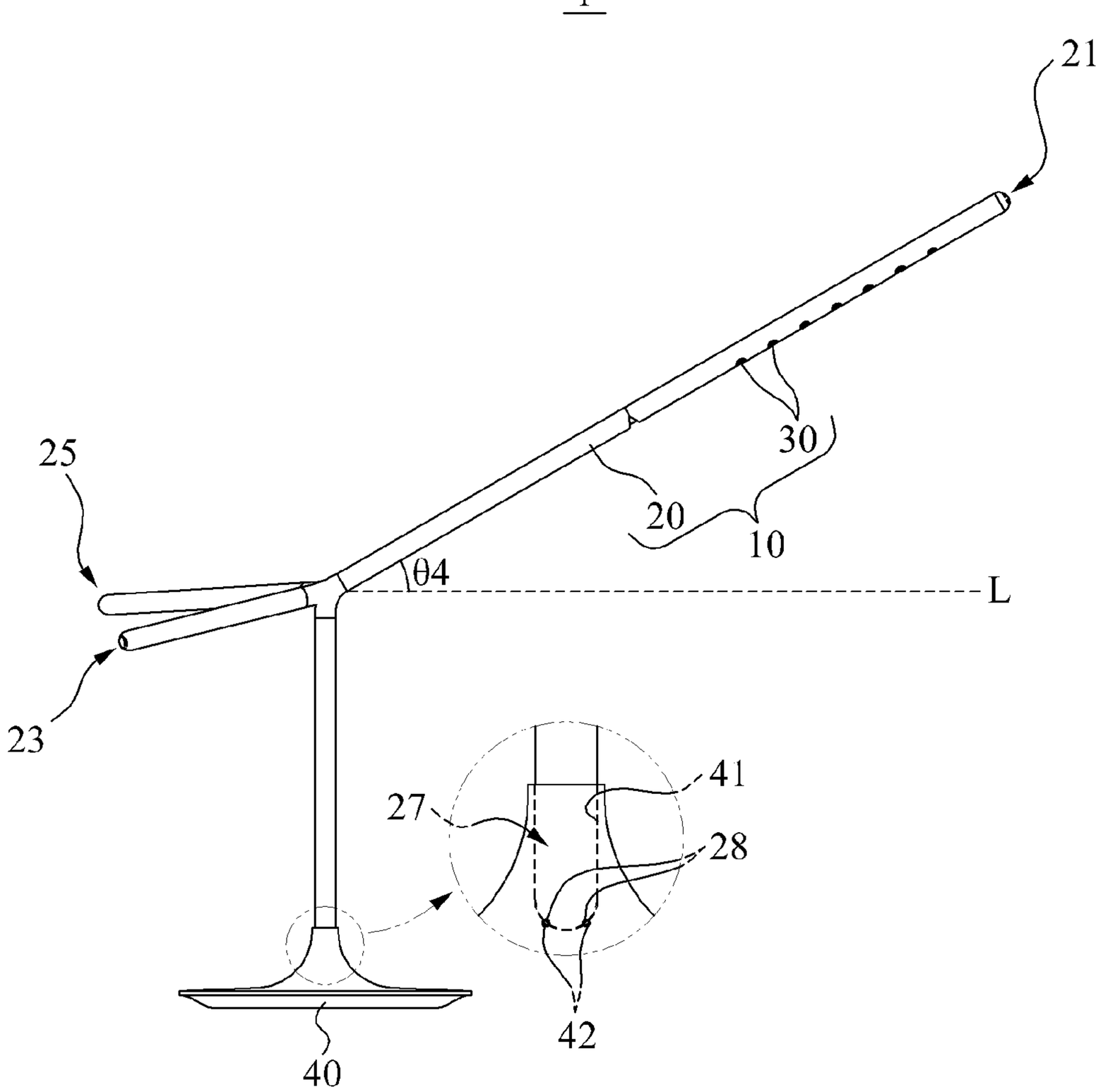


FIG. 6

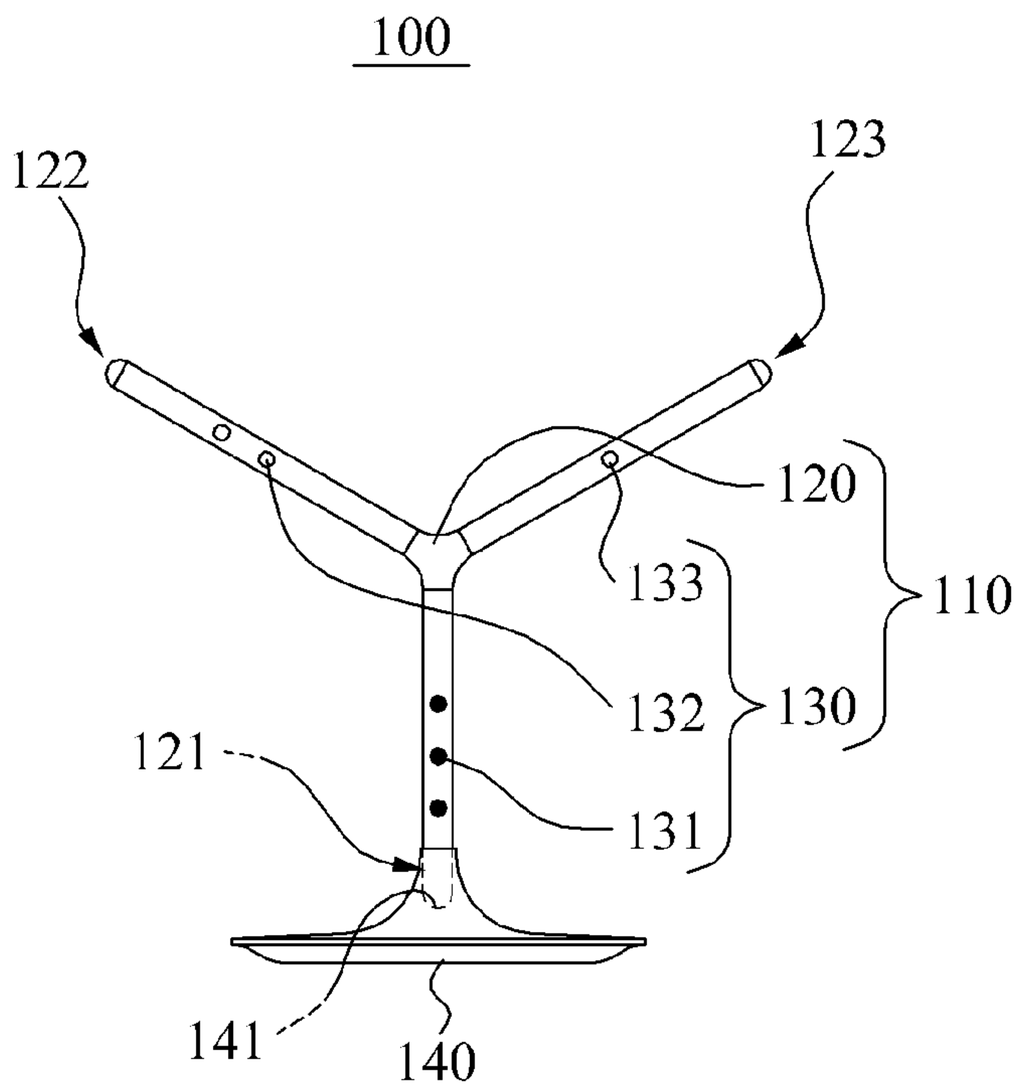
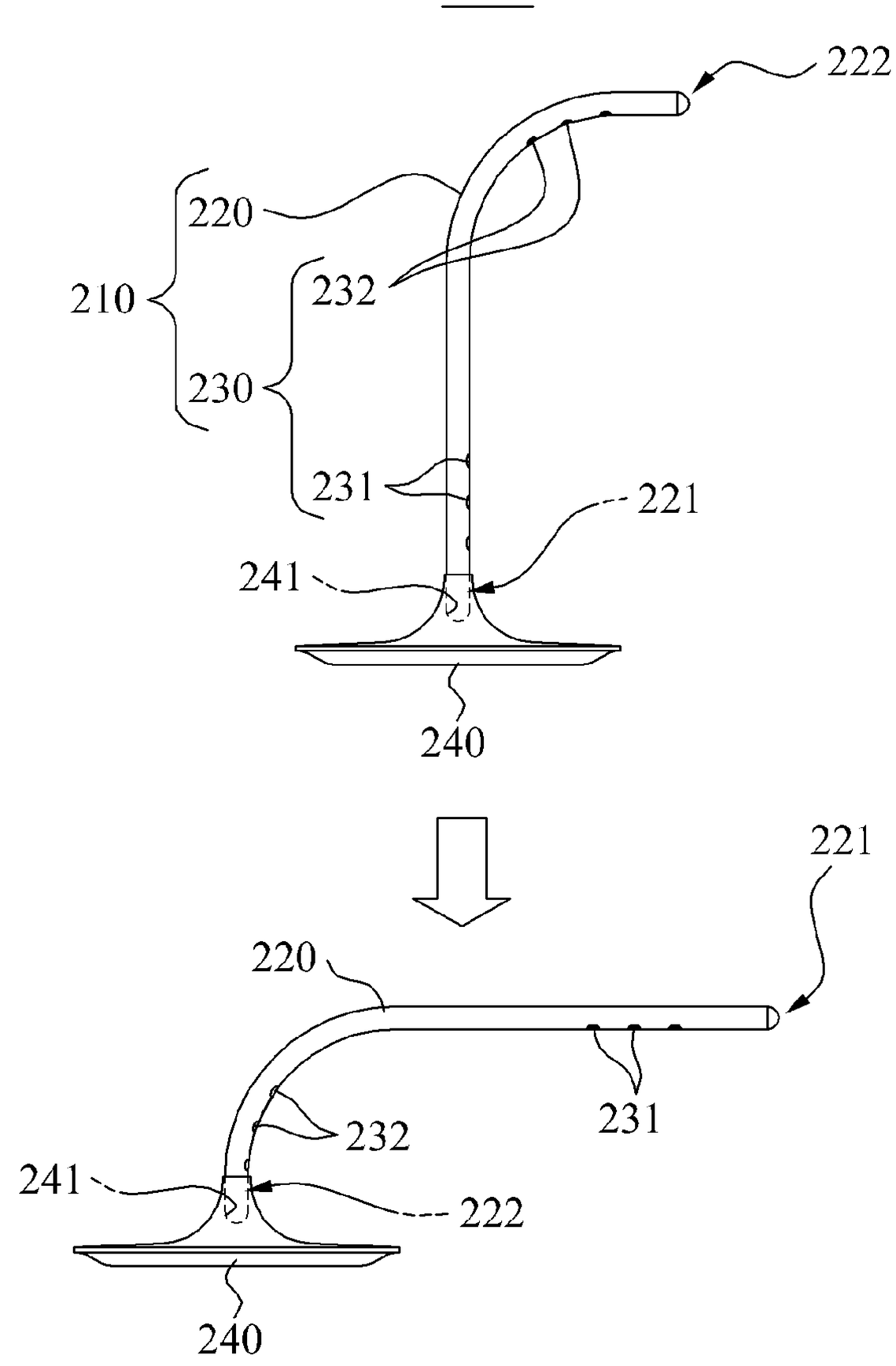


FIG. 7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# VARIABLE LIGHTING APPARATUS

## CROSS-REFERENCE TO RELATED APPLICATION

This application claims the benefit of Korean Patent Application No. 10-2011-0050076, filed on May 26, 2011, in the Korean Intellectual Property Office, the disclosure of which is incorporated herein by reference.

## BACKGROUND

1. Field of the Invention

The present invention relates to a variable lighting apparatus that changes a lighting environment based on various conditions, and more particularly, to a variable lighting apparatus that readily changes a light angle, a light direction, an amount of light, and the like based on a connection posture with a supporting device that provides power.

2. Description of the Related Art

A lighting device is installed in indoor space or outdoor space to brighten a dark environment. The lighting device may be classified as a fixed type that is fixed at a predetermined location in an indoor space or an outdoor space, such as a street light, a ceiling light, and a wall light, and as a non-fixed type a location of which is adjusted by a user, such as a desk lamp and the like.

The lighting device may be classified into various types, based on an intended purpose, including lightings for indoor spaces or outdoor spaces, sub-lightings having a relatively low illumination, such as a mood lamp and the like, down-lights for a predetermined space such as a kitchen, an entrance, and a porch.

The lighting device is manufactured for a predetermined purpose and the purpose can not be changed while the lighting device is in use. That is, the lighting device is manufactured for one purpose and thus, may not be able to be used for another purpose. Therefore, there is a need of a lighting device adaptable for various purposes.

## SUMMARY

An aspect of the present invention provides a variable lighting apparatus that readily changes a lighting condition while in use, and thus the variable lighting apparatus may be used for various purposes.

According to an aspect of the present invention, there is provided a variable lighting apparatus, the apparatus including a lighting unit to emit light, and a supporting unit selectively connected with the lighting unit to support the lighting unit, and to provide power to the connected lighting unit, and the lighting unit changes a lighting condition through changing a connection posture with respect to the supporting unit.

The lighting unit may include at least one light emitting diode (LED) and a plurality of contact point portions connected with the supporting unit based on a contact point connection scheme.

The supporting unit may include a supporting recess to which a portion of the lighting unit is inserted, and a power providing portion formed in the supporting recess may be connected with the lighting unit inserted into the supporting recess, based on a contact point connection scheme, to provide power to the lighting unit.

The lighting unit may include a body including a plurality of connection end portions that extend in different directions, at different angles, and to different lengths, and that have contact points for connecting with the supporting portion, respectively, and at least one light emitting member mounted on the body and varying at least one of a light angle, a light direction, an elevation of light, and an amount of light based on a connection between one of the plurality of connection end portions and the supporting unit.



The lighting unit may include a body including a plurality of connection end portions that extend to the same length, in different directions, and at different angles, and that have contact points for connecting with the supporting unit, respectively, and a plurality of light emitting members mounted on the body, to independently emit different amounts of light based on a corresponding connection between the plurality of connection end portions and the supporting unit.

The lighting unit may include a body including a first connection end portion including a first contact point for connecting with the supporting unit, and a second connection end portion that extends from the first connection end portion in a curve and includes a second contact point for connecting with the supporting unit, and at least one light emitting portion mounted on the body to emit the same amount of light or a plurality of light emitting members mounted on the body to emit different amounts of light.

The lighting unit may include a body including a first connection end portion including a first contact point for connecting with the supporting unit, a second connection end portion that extends in a different direction and at a different angle from the first connection end portion and includes a second contact portion for connecting with the supporting unit, and a third connection end portion that extends in a different direction and at a different angle from the first connection end portion and the second connection end portion and includes a third contact portion for connecting with the supporting unit, and a first light emitting portion, a second light emitting portion, and a third light emitting portion mounted on the first connection end portion, the second connection end portion, and the third connection end portion, respectively, to independently emit light based on power provided from the first contact point, the second contact point, and the third contact point respectively.

According to another aspect of the present invention, there is provided a variable lighting apparatus, the apparatus including a lighting unit configured to emit light, and comprising a plurality of connection end portions that extend in different directions and at different angles, and a supporting unit selectively connected with one of a plurality of connection end portions of the lighting unit to support the lighting unit, and providing power through connecting with the lighting unit based on a contact point connection scheme, and at least one of a light angle, a light direction, an elevation of light, and an amount of light associated with light emitted from the lighting unit varies based on a change in a state of connections between the plurality of connection portions and the supporting unit.

The plurality of connection end portions may have different lengths.

The plurality of connection end portions may extend to be inclined with respect to the body or extend in a curve.

The lighting unit may include at least one light emitting member having the same amount of light, or a plurality of light emitting members having different amounts of light and configured to emit light, independently, based on a corresponding connection between the plurality of connection end portions and the supporting unit.

The lighting unit may include at least one light emitting diode (LED).

The supporting unit may include a supporting recess to which one of the plurality of connection end portions is inserted, and a power providing portion may be included in the supporting recess and may provide power through connecting with one of the plurality of connection end portions based on a contact point connection scheme.

The variable lighting apparatus may further include a fixing portion to fix a posture of the lighting unit on the supporting unit.

Additional aspects, features, and/or advantages of the invention will be set forth in part in the description which follows and, in part, will be apparent from the description, or may be learned by practice of the invention.

## BRIEF DESCRIPTION OF THE DRAWINGS

These and/or other aspects, features, and advantages of the invention will become apparent and more readily appreciated from the following description of embodiments, taken in conjunction with the accompanying drawings of which:

FIG. **1** is a perspective view of a variable lighting apparatus according to an embodiment of the present invention;

FIG. **2** is a side view of a connection between a first connection end portion of the variable lighting apparatus of FIG. **1** and a supporting unit according to an embodiment of the present invention;

FIG. **3** is a side view of a connection between a second connection end portion of the variable lighting apparatus of FIG. **1** and a supporting unit according to an embodiment of the present invention;

FIG. **4** is a side view of a connection between a third connection end portion of the variable lighting apparatus of FIG. **1** and a supporting unit according to an embodiment of the present invention;

FIG. **5** is a side view of a connection between a fourth connection end portion of the variable lighting apparatus of FIG. **1** and a supporting unit according to an embodiment of the present invention;

FIG. **6** is a side view of a variable lighting apparatus according to another embodiment of the present invention; and

FIG. **7** is a side view of a variable lighting apparatus according to still another embodiment of the present invention.

## DETAILED DESCRIPTION

Reference will now be made in detail to embodiments of the present invention, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to the like elements throughout. Embodiments are described below to explain the present invention by referring to the figures.

FIG. **1** illustrates a variable lighting apparatus **1** according to an embodiment of the present invention.

Referring to FIG. **1**, the variable lighting apparatus **1** includes a lighting unit **10** and a supporting unit **40**.

Here, the lighting unit **10** may emit light. For example, the lighting unit **10** changes a lighting condition, such as a light angle, a light direction, an elevation of light, an amount of light, and the like, based on a change in a connection posture with the supporting unit **40**. The lighting unit **10** may include a body **20** and at least one light emitting member **30**.

The body **20** may include a plurality of connection end portions **21**, **23**, **25**, and **27** that extend in different angles and different directions, respectively. The plurality of connection end portions **21**, **23**, **25**, and **27** may include a first connection end portion **21** that extends from one end of the body **20** in one direction, and a second connection end portion **23**, a third connection end portion **25**, and a fourth connection end portion **27** that extend, from the other end of the body **20**, in different directions and at different angles, respectively. In this example, the first connection end portion **21**, the second connection end portion **23**, the third connection end portion **25**, and the fourth connection end portion **27** may extend from the body **20** to different lengths.

The first connection end portion **21** may include a first contact point **22**, the second connection end portion **23** may include a second contact point **24**, the third connection end portion **25** may include a third contact point **26**, and the fourth connection end portion **27** may include a fourth contact point **28**. The first through fourth contact points **22**, **24**, **26**, **28** may include positive poles and negative poles, respectively, and may be electrically connected with the supporting unit **40** based on a contact point-connection scheme.

Although not illustrated in detail, the body **20** may be configured to be hinged using a hinge so that a posture is changeable, which will be described with reference to FIG. **3**.

The at least one light emitting member **30** may be mounted the body **20**. According to the present embodiment, the at least one light emitting member **30** may be mounted on one position close to the first connection end portion **21** of the body **20**. In this example, a light angle, a light direction, and an elevation of light associated with light emitted from the at least one light emitting member **30** may be adjusted based on a change in a state of a connection between the supporting unit **40** and one of the first connection end portion **21**, the second connection end portion **23**, the third connection end portion **25**, and the fourth connection end portion **27**, as illustrated in FIGS. **2** through **5**. Adjusting of the light angle, the light direction, and the height of light of the at least one light emitting member **30** will be described in detail.

For example, the at least one light emitting member **30** may include a light emitting diode (LED) that is economical, since the LED consumes low power, has a long lifespan, and is eco-friendly.

The supporting unit **40** may be selectively connected with the lighting unit **10** to support the lighting unit **10** and to provide power. The supporting unit **40** may include a supporting recess **41** to which a portion of the lighting unit **10** is inserted. A power providing portion that is connected with the lighting unit **10** and provides power may be included in the supporting recess **41**. The power providing portion will be described with reference to FIG. **2**. In this example, the power providing portion may be connected with a contact point included in a connection end portion, for example, the contact point **22** included in the first connection end portion **21**, the contact point **24** included in the second connection end portion **23**, the contact point **26** included in the third connection end portion **25**, and the contact point **28** included in the fourth connection end portion **27**. Accordingly, the power providing portion may have a positive pole and a negative pole corresponding to the first through the fourth contact points **22**, **24**, **26**, and **28**.

For example, the supporting unit **40** may be mounted in a predetermined area, such as a desk and the like, based on a non-fixing scheme, so as to support the lighting unit **10**, or may be fixed on an indoor wall, so as to support the supporting unit **40**.

A lighting method of the variable lighting apparatus **1** according to an embodiment of the present invention will be described with reference to FIGS. **2** through **5**.

FIG. **2** illustrates a connection between a first connection end portion of the variable lighting apparatus of FIG. **1** and a

supporting unit according to an embodiment of the present invention. FIG. **3** illustrates a connection between a second connection end portion of the variable lighting apparatus of FIG. **1** and a supporting unit according to an embodiment of the present invention. FIG. **4** illustrates a connection between a third connection end portion of the variable lighting apparatus of FIG. **1** and a supporting unit according to an embodiment of the present invention. FIG. **5** illustrates a connection between a fourth connection end portion of the variable lighting apparatus of FIG. **1** and a supporting unit according to an embodiment of the present invention

Referring to FIG. **2**, the first connection end portion **21** of the lighting unit **10** is inserted into the supporting recess **41** of the supporting unit **40**. In this example, the first connection end portion **21** may be connected with the supporting unit **40** at an angle of 90 degrees (θ**1**) with respect to a standard line L that is horizontal with respect to a mounting surface on which the supporting unit **40** is mounted.

When the first contact point **22** included in the first connection end portion **21** is electrically connected with a power providing portion **42** inside the supporting recess **41**, the at least one light emitting member **30** may emit light at a position close to the supporting unit **40**, that is, at a relatively lower portion of the body **20**. In this example, the at least one light emitting member **30** emits light from the lower portion of the body **20**, so that the variable lighting apparatus **1** may provide a function of a mood lamp.

Referring to FIG. **3**, the second connection end portion **23** of the lighting unit **10** is inserted into the supporting recess **41** of the supporting unit **40**. When the second connection end portion **23** is connected with the supporting unit **40**, the second contact point **24** included in the second connection end portion **23** may be connected with the power providing portion **42** inside the supporting recess **41** so that the at least one light emitting member **30** may emit light. In this example, when the second connection end portion **23** is connected with the supporting unit **40**, the body **20** including the at least one light emitting member **30** may be inclined at an angle of 60 degrees (θ**2**) with respect to the standard line L. Accordingly, the at least one light emitting member **30** may emit light at a relatively upper portion of the body **20** at θ**2** with respect to the standard line L. Therefore, the variable lighting apparatus **1** may provide a function of a desk lamp.

Referring to FIG. **4**, when the third connection end portion **25** of the lighting unit **10** is inserted into the supporting recess **41** of the supporting unit **40**, the third contact point **26** of the third connection end portion **25** may be connected with the power providing portion **42** inside the supporting recess **41**. The body **20** may be inclined at an angle of 45 degrees (θ**3**) with respect to the standard line L and may support the at least one light emitting member **30**, so that the at least one light emitting member **30** may emit light at θ**3** with respect to the standard line L. Accordingly, the at least one light emitting member **30** may emit light at a relatively upper portion of the body **20** so that the variable lighting apparatus **1** may provide a function of a desk lamp.

Referring to FIG. **5**, by changing a posture of the lighting unit **10**, the fourth connection end portion **27** is inserted into the supporting recess **41** of the supporting unit **40**, and a fourth contact point **28** of the fourth connection end portion **27** is electrically connected with the power providing portion **42**. In this example, the body **20** may be inclined at an angle of 30 degrees (θ**4**) and supports the at least one light emitting member **30**. Accordingly, the at least one light emitting member **30** may emit light at θ**4** with respect to the standard line L at a relatively upper portion of the body **20** so that the variable lighting apparatus **1** may provide a function of a desk lamp.

A light angle associated with light emitted from the at least one light emitting member **30** of the lighting unit **10** may vary based on a change in a connection posture of the lighting unit **10** with the supporting unit **40**. In addition, based on a change in a posture of the lighting unit **10**, an angle, for example, θ**1**, θ**2**, θ**3**, and θ**4**, at which the lighting unit **10** supports the at least one light emitting member **30** may vary, and a length extending from the body **20** may vary, so that a light direction and an elevation of light of the at least one light emitting member **30** may vary.

FIG. **6** illustrates a variable lighting apparatus **100** according to another embodiment of the present invention.

Referring to FIG. **6**, the variable lighting apparatus **100** includes a lighting unit **110** and a supporting unit **140**.

The lighting unit **110** may include a body **120** and a plurality of light emitting members **130** mounted on the body **120**. In this example, the body **120** may include a first connection end portion **121**, a second connection end portion **122**, and a third connection end portion **123**, that extend to be inclined in different directions, respectively. Although not illustrated, the first connection end portion **121**, the second connection end portion **122**, and the third connection end portion **123** include a first contact point, a second contact point, and a third contact point, respectively.

Referring to FIG. **6**, the first connection end portion **121**, the second connection end portion **122**, and the third connection end portion **123** extend in different directions from the body **120**, and extend to be inclined at the same angle. Also, lengths of the first connection end portion **121**, the second connection end portion **122**, and the third connection end portion **123** extending from the body **120** may be the same. Here, the configuration may not limited thereto. The angle inclined with respect to the body **120** or the length of the first connection end portion **121**, the second connection end portion **122**, and the third connection end portion **123** may be changed in various ways.

The plurality of light emitting members **130** may include a first light emitting portion **131** mounted close to the first connection end portion **121**, a second light emitting portion **132** mounted close to the second connection end portion **122**, and a third light emitting portion **133** mounted close to the third connection end portion **123**. Here, the first light emitting portion **131**, the second light emitting portion **132**, and the third light emitting portion **133** are configured to emit different amounts of light as illustrated in FIG. **6**. The first light emitting portion **131** may be configured to emit a relatively greater amount of light than the second light emitting portion **132** and the third light emitting portion **133**, and the third light emitting portion **133** may be configured to emit a relatively smaller amount of light than the first light emitting portion **131** and the second light emitting portion **132**. In this example, the amount of light emitted from the first light emitting portion **131**, the second light emitting portion **132**, and the third light emitting portion **133** may not be limited as illustrated in FIG. **6**, and may be changed in various ways.

The first light emitting portion **131** may emit light when the first connection end portion **121** is connected with the supporting unit **140**, the second light emitting portion **132** may emit light when the second connection end portion **122** is connected with the supporting unit **130**, and the third light emitting portion **133** may emit light when the third connection end portion **123** is connected with the supporting unit **140**. A lighting operation of the plurality of light emitting members **130** corresponding to the first light emitting portion **131**, the second light emitting portion **132**, and the third light emitting portion **133**, will be described in detail.

The supporting unit **140** may include a supporting recess **141** to which the first connection end portion **121**, the second connection end portion **122**, and the third connection end portion **133** of the body **120** are selectively inserted, so as to support the body **120**. Since the supporting unit **140** has the same configuration as the supporting unit **40** described with reference to FIGS. **1** through **5**, detailed descriptions thereof will be omitted.

In the variable lighting apparatus **100** configured as described in the foregoing, the first connection end portion **121** of the body **120** may be inserted into the supporting recess **141** of the supporting unit **140**, the first light emitting portion **131** mounted close to the first connection end portion **121** may emit light. In this example, the second light emitting portion **132** and the third light emitting portion **133** included in the second connection end portion **122** and the third connection end portion **123** may not emit light. A first contact point (not illustrated) included in the first connection end portion **121** may be connected with a power providing portion (not illustrated) inside the supporting recess **141**, so that the first light emitting portion **141** may operate.

In the same manner as the lighting operation of the first light emitting portion **131**, when the second connection end portion **122** is connected with the supporting unit **140**, the second light emitting portion **132** may emit light. Also, when the third connection end portion **123** is connected with the supporting unit **140**, the third light emitting portion **133** may emit light. Accordingly, the user may change a connection posture between the body **120** of the lighting unit **110** with the supporting unit **140** based on a desired amount of light and thus, may readily change the amount of light emitted from the plurality of light emitting members **130** to the desired amount of light.

FIG. **7** illustrates a variable lighting apparatus **200** according to still another embodiment of the present invention.

Referring to FIG. **7**, the variable lighting apparatus **200** includes a lighting unit **210** and a supporting unit **24**.

The lighting unit **210** may include a body **220** and a plurality of light emitting members **230**. Here, the body **220** may include a first connection end portion **221**, and a second connection end portion **222** that extends from the first end connection end portion **221** in a curve. Although not illustrated, the first connection end portion **221** may include a first contact point and the second connection end portion **222** may include a second contact point. The configurations of the first contact point and the second contact point are similar to the contact points illustrated in FIG. **1** and thus, detailed descriptions thereof will be omitted.

The plurality light emitting members **230** may be mounted on the body **220**, and the may include a first light emitting portion **231** mounted on a side of the first connection end portion **221** and a second light emitting portion **232** mounted on a side of the second connection end portion **222**. Even though the first light emitting portion **231** and the second light emitting portion **232** may be configured to emit the same amount of light, the configuration may not be limited thereto. For example, the first light emitting portion **231** and the second light emitting portion **232** may be configured to emit different amounts of light as illustrated in FIG. **6**.

Unlike the light emitting portions of FIG. **6**, the first light emitting portion **231** may emit light when the second connection end portion **222** is connected with the supporting unit **240**, and the second light emitting portion **232** may emit light when the first connection end portion **221** is connected with the supporting unit **240**. A lighting operation of the plurality of light emitting members **230** corresponding to the first light emitting portion **231** and the second light emitting portion **232** will be described in detail.

The supporting unit **240** may be configured to include a supporting recess **241** to which the first connection end portion **221** and the second connection end portion **222** of the body **220** are inserted, so as to support the lighting unit **210**. The configuration of the supporting unit **240** may be the same as the supporting unit **40** of FIGS. **1** through **5** and the supporting unit **140** of FIG. **6**, detailed descriptions thereof will be omitted.

Referring to FIG. **7**, a light angle, a light direction, and an elevation of light associated with light emitted from the plurality of light emitting members **230** may vary based on a posture of connection between the body **220** of the lighting unit **210** with the supporting unit **240**. Particularly, when the first connection end portion **221** of the lighting body **220** is inserted into the supporting recess **241**, the second light emitting portion **232** may emit light. When the posture of the body varies and the second connection end portion **222** is inserted into the supporting recess **241**, the first light emitting portion **231** may emit light. In this example, when the second light emitting portion **232** emits light, an elevation of light may be relatively higher than when the first light emitting portion **231** emits light. Also, the first light emitting portion **231** emits light to a location that is relatively father than a location to which the second light emitting portion **232** emits light, based on a location where the supporting unit **240** is mounted.

Even though the example embodiments of FIGS. **1** through **7** do not include a separate unit for fixing a state of the supporting unit supporting the lighting unit of the variable lighting apparatus, the configuration may not be limited thereto. The configuration of fixing the lighting unit and the supporting unit will be variably changed. For example, a magnet may be mounted in a plurality of connection end portions included in the lighting unit and in an internal surface of the supporting recess, so as to induce mutual attractive forces. Here, the variable lighting apparatus may change lighting conditions by changing a connection posture of the lighting unit with respect to the supporting unit so that a single lighting apparatus may provide various functions appropriate for various environments.

The variable lighting apparatus may be economical since the user may adjust a light angle, a light direction, an elevation of light, and an amount of light based on environmental conditions.

The lighting unit may be connected with the supporting unit based on a contact point connection scheme, and may receive power for lighting so that the variable lighting apparatus may not include a complex power providing line and may have an advantage in terms of design.

The variable lighting apparatus may include an LED and thus, may provide an eco-friendly and economical lighting apparatus.

Although a few embodiments of the present invention have been shown and described, the present invention is not limited to the described embodiments. Instead, it would be appreciated by those skilled in the art that changes may be made to these embodiments without departing from the principles and spirit of the invention, the scope of which is defined by the claims and their equivalents.

What is claimed is:

**1**. A variable lighting apparatus, comprising:

a lighting unit configured to emit light and comprising a first connection member and a second connection member of which a first end of the second connection member is connected to a first end of the first connection member; and

a supporting unit comprising a supporting recess configured to selectively connect to one of a second end of the first connection member and a second end of the second connection member and provide power to the connected lighting unit such that each of the first and second connection members is selectively in direct contact with the supporting recess,

wherein the first connection member and the second connection member are configured to independently emit amounts of light different from each other, and

the lighting unit, when the second end of the first connection member connects to the supporting recess, emits an amount of light different from an amount of light of the lighting unit when the second end of the second connection member connects to the supporting recess.

**2**. The apparatus of claim **1**, wherein:

the first connection member includes a first contact point for connecting with the supporting recess, and the second connection member extends in a different direction from the first connection member and includes a second contact point for connecting with the supporting recess, and

the lighting unit further comprises a third connection member that extends in a different direction from the first connection member and the second connection member and includes a third contact point for connecting with the supporting recess; and

the lighting unit further comprises a first light emitting portion, a second light emitting portion, and a third light emitting portion disposed on the first connection member, the second connection member, and the third connection member, respectively, to independently emit light based on power provided from the first contact point, the second contact point and the third contact point, respectively.

**3**. The apparatus of claim **1**, wherein:

the lighting unit comprises a plurality of connection members including the first and second connection members, and

the lighting unit comprises a plurality of light emitting members configured to independently emit an amount of light identical to one another or amounts of light different from each other, based on a corresponding connection between the plurality of connection members and the supporting recess.

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